

DaimlerChrysler AG

Patent Claims

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1. A sensor apparatus for determination of a tire internal pressure for a motor vehicle by means of at least one measurement sensor (6) in the form of an optical fiber, with an evaluation and computer unit  
10 (11) deducing the sought parameter from the change in the light wave, characterized in that the at least one measurement sensor (6) determines the shape and/or size of a tire contact area as an indicator of the internal pressure in the tire (2).

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2. The sensor apparatus as claimed in claim 1, characterized in that an evaluation and computer unit (11) uses low-pass filtering to eliminate the wheel load which influences the shape and/or the size of the  
20 tire contact area.

3. The sensor apparatus as claimed in claim 1 or 2, characterized in that the measurement sensor (6) is connected to the evaluation and computer unit (11) of  
25 the sensor apparatus (5) by means of an optical transmission device.

4. The sensor apparatus as claimed in one of claims 1 to 3, characterized in that the evaluation and computer  
30 unit (11) of the sensor apparatus (5) is arranged in the tire (2).

5. The sensor apparatus as claimed in claim 4, characterized in that the evaluation and computer unit  
35 (11) is vulcanized into the tread of the tire.

6. The sensor apparatus as claimed in one of claims 1 to 5, characterized in that a tire temperature is measured by means of a temperature sensor (12), tire

heating is detected by means of the evaluation and computer unit (11) and any flexing work is estimated in order to determine the difference between a nominal pressure and an actual pressure.

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7. The sensor apparatus as claimed in one of claims 1 to 6, characterized in that the evaluation and computer unit (11) is in the form of an evaluation unit for fiber-optic Bragg grating systems, in which the wavelength is determined by means of passive edge filters on independent channels.

8. The sensor apparatus as claimed in one of claims 1 to 6, characterized in that a superluminescent diode (SLD) is provided as the light source.

9. The sensor apparatus in particular as claimed in one of claims 1 to 8, characterized in that the tire temperature is measured continuously by means of a temperature sensor (12) and any flexing work is determined from this.